# Microspecifications Manual
# For Reporting of the Healthcare Associated Infection Quality Data Set

Draft 2-2008
Effective for Second Quarter 2008 HAI Data
(Data generated starting April 2008)

## STATUTORY AUTHORITY: 22 M.R.S.A., §8708-A, Chapter 270

## Healthcare Associated Infection Quality Dataset
## Data Collection and Reporting Instructions

In accordance with the above statutory authority, the following instructions are applicable to all Maine acute care hospitals.

For all patients identified as eligible cases in the specific denominator and numerator categories (minus Exclusions:) listed in the most current version of the CDC guidance as found at the Maine Health Data Organization (MHDO) website at http://mhdo.maine.gov/imhdo/qualitydata.aspx, each hospital or their agent shall report data to the MHDO for the following healthcare associated infection (HAI) quality metrics:

**HAI - 1** Central line catheter associated blood stream infection rate for intensive care unit patients, and;

**HAI - 2** Central line catheter associated blood stream infection rate for high-risk nursery patients.

For all patients identified as eligible cases in the specific denominator and numerator categories listed in the most current versions of the Institute for Healthcare Improvement (IHI) 5M Lives Campaign Getting Started Kit: Prevent Central Line Infections and Prevent Ventilator Associated Pneumonia How-to Guides unless such IHI publications are contradicted by the CDC guidance as found at the Maine Health Data Organization website at http://mhdo.maine.gov/imhdo/qualitydata.aspx, each hospital or their agent shall report data to the MHDO for the following healthcare associated infection (HAI) quality metrics:

**HAI - 3** Percent compliance with all five evidence-based interventions for patients with intravascular central catheters (central line bundle compliance) in intensive care units;

**HAI - 4** Percent compliance with the four insertion related evidence-based interventions for patients with intravascular central catheters (central line bundle compliance) placed preoperatively, in pre-operative areas, operating rooms, and recovery areas, and;

**HAI - 5** Percent compliance with all four evidence-based interventions for patients with mechanical ventilation (ventilator bundle compliance) in intensive care units.

## ADDITIONAL REGULATORY INFORMATION

### Submission Requirements

1. Filing Media. Each hospital or their agent shall file all applicable data sets on diskette, compact disc, or via electronic transmission provided that such diskette, compact disc, or electronic transmission is compatible with the data processing capabilities of the MHDO.

2. File Submission. All data file submissions shall be accompanied by an electronic transmittal sheet containing the following information: identification of the health care facility, file name, data period(s) (quarter/year), date sent, and a contact person with telephone number and E-mail address. The data collection and transmittal sheets are posted at the MHDO's website at: http://mhdo.maine.gov/imhdo/qualitydata.aspx. The data file naming convention is presented in Appendix A.

3. Filing Periods. Data generated in accordance with the provisions of this manual shall be submitted at the end of the 5th month following the end of each calendar quarter in which the service occurred. The filing periods are as follows:

| Collection Quarter | Months | Submission Date (no later than) |
|---|---|---|
| 1st Quarter | January, February, March | September 1st |
| 2nd Quarter | April, May, June | December 1st |
| 3rd Quarter | July, August, September | March 1st |
| 4th Quarter | October, November, December | June 1st |

### Standards for Data; Notification; Response

Standards. The MHDO or its designee shall evaluate each file submission in accordance with the following standards:

1. For each category of metrics, hospitals shall report each numerator (metric) and denominator (population) as specified in this manual and at the MHDO website at http://mhdo.maine.gov/imhdo/qualitydata.aspx

2. Coding values indicating “data not available”, “data unknown”, or the equivalent will not be accepted.

3. Notification. Upon completion of this evaluation, the MHDO will promptly notify each hospital whose data submissions do not satisfy the standards for any filing period. This notification will identify the specific file and the data elements within them that do not satisfy the standards.

4. Resubmission. Each hospital notified under of the failure of their submission to meet the standards for filing under MHDO Rules, will resubmit the data within 30 days of the notification by making the necessary changes to satisfy the standards.

5. Replacement of Data Files. No hospital may amend its data submission more than one year after the end of the quarter in which the discharge or service occurred unless it can be established by the hospital that exceptional circumstances occurred. Any resubmission of data after the elapse of the one year period must be approved by the MHDO Board.

**Public Access**

Information collected, processed and/or analyzed under this rule shall be subject to release to the public or retained as confidential information in accordance with 22 M.R.S.A. § 8707 and Code of Maine Rules 90-590, Chapter 120: Release of Information to the Public, unless prohibited by state or federal law.

**Waivers to Data Submission Requirements**

If a hospital or ambulatory surgery facility due to circumstances beyond its control is temporarily unable to meet the terms and conditions of this Chapter, a written request must be made to the Executive Director of the MHDO as soon as it is practicable after the hospital has determined that an extension is required. The written request shall include: the specific requirement to be waived; an explanation of the cause; the methodology proposed to eliminate the necessity of the waiver; and the time frame required to come into compliance. The Executive Director shall present the request to the MHDO Board at its next regularly scheduled meeting where the request shall be approved or denied.

**Compliance**

The failure to file, report, or correct quality data in accordance with the provisions of this Chapter may be considered a violation under 22 MRSA Sec. 8705-A.

## DEFINITIONS

### "Temporary Central Line Catheters"

Temporary central line venous catheters provide convenient reliable long-term venous access. However their disruption of the skin integrity makes infection with bacteria and/or fungi possible. Infection may spread to the bloodstream and hemodynamic changes and organ dysfunction (severe sepsis) may ensue, possibly leading to death. The focus of this HAI reporting is to direct surveillance efforts towards those patients with central line catheters most likely to result in unintended nosocomial bloodstream infections. All patients at risk regardless of their location in the hospital or the location of the insertion of their central line catheter should receive the benefits of surveillance. However, due to the limited resources within hospitals, HAI data reporting is limited to central lines inserted in the ICU (or mixed acuity unit) or in perioperative areas (in pre-operative areas, operating rooms, and recovery areas).

For the purpose of reporting central-line infections and counting central-line days, a temporary central line catheter is defined as an intravascular non-tunneled catheter that terminates at or close to the heart or in one of the great vessels which is used for infusion, withdrawal of blood, or hemodynamic monitoring as specified by the Centers for Disease Control and Prevention's National Healthcare Safety Network (NHSN) Patient Safety Component Protocol.

The following are considered great vessels for the purposes of HAI reporting: aorta, pulmonary artery, superior vena cava, inferior vena cava, brachiocephalic veins, internal jugular veins, subclavian veins, external iliac veins, and common femoral veins.

According to the Infusion Nursing Standards of Practice, a non-tunneled catheter is defined as a vascular access device inserted by a puncture directly through the skin and to the intended vascular location without passing through subcutaneous tissue. Examples include more short-term types of catheters, i.e. peripherally inserted central catheters (PICC) and subclavian single, double, or triple lumens. For the purposes of HAI reporting, these non-tunneled catheters are included. Introducers in great vessels and umbilical catheters and non-umbilical central lines in neonates (per CDC's NHSN Patient Safety Component Protocol) are also considered temporary central line catheters and are included.

A tunneled catheter is defined as a vascular access device whose proximal end is tunneled subcutaneously from the vascular insertion site and brought out through the skin at an exit site (per the Infusion Nursing Standards of Practice). Types of tunneled catheters include more long-term types, i.e. Hickman, Broviac, Raaf, and Groshong. For the purposes of HAI reporting, these tunneled catheters are excluded. Permanent central lines including certain dialysis catheters and implanted catheters (including ports or portacaths) are also

excluded. Pace-maker wires and other non-lumened devices inserted into central blood vessels or the heart are also excluded because fluids are not infused, pushed, nor withdrawn through such devices.

For the purposes of this reporting effort, central lines inserted for diagnostic purposes (e.g., right heart catheterization, pulmonary angiography) that are normally removed directly after insertion, are not included in HAI reporting because these lines are not the most likely to cause local or systemic complications. It is hoped that by starting with therapeutic central line catheters, hospitals would become expert in the application of the bundle and develop the skill and manpower to translate the practice to other types of central lines and other areas of the hospital, and ultimately do so.

**"CLALCBSI**" Central Line Associated Laboratory Confirmed Bloodstream Infection

A Central Line Associated Laboratory Confirmed Bloodstream Infection (CLALCBSI) is defined as laboratory-confirmed bloodstream infection (LCBSI) as specified in the most current version of the Centers for Disease Control and Prevention's National Healthcare Safety Network (NHSN) Patient Safety Component Protocol in patients with a risk factor of having a temporary central line or umbilical catheter at the time of or within the 48 hours prior to developing the infections.

**"Umbilical Catheter"**

A central vascular device inserted through the umbilical artery or vein in a neonate.

**"Ventilator" or "Mechanical Ventilation"**

A ventilator is a device to assist or control respiration continuously, inclusive of the weaning period, through a tracheostomy or by endotracheal intubation. Lung expansion devices such as intermittent positive-pressure breathing (IPPB); nasal positive end-expiratory pressure (PEEP); and continuous nasal positive airway pressure (CPAP, hypoCPAP) are not considered ventilators unless delivered via tracheostomy or endotracheal intubation (e.g., ET-CPAP).

# INSTRUCTIONS

# DATA SPECIFICATIONS

## Utilization Data

Hospitals will submit data on the utilization of central lines and ventilators in their facilities by reporting the number of Central Line Days in the past 12 months and the number of Ventilator Days in the past 12 months in their ICUs, mixed acuity units, and NICUs*/* high risk nurseries. If a facility has one or more designated ICU, they will report HAI data for all their ICU patients. If a facility doesn't have a designated ICU, they will report HAI data for every patient in their mixed acuity unit regardless of whether or not the patient is in a "critical care" or "special care" bed in that unit.

Hospitals will report utilization data for the 12 months prior to the end of the reporting period (i.e., the period beginning nine months before the start of the reporting period and including the three months of the reporting period).

### Determination of Temporary Central Line Days in ICUs, Mixed Acuity Units, and NICUs/High Risk Nurseries

At the same time each day, the number of patients with one or more temporary central lines in each ICU and mixed acuity unit and the number of patients with temporary central lines and/or those with umbilical catheters in each NICU/ high risk nursery should be counted and at the end of the month these counts are summed. At the end of the quarter these monthly counts are summed and used as the quarterly denominators for reporting temporary central line days and to report the number of central line days in the past 12 months.

If a patient has more than one temporary central line on a given day, this is counted only as one central line day. If a patient has both a temporary and a permanent central line on the same day, the day is counted as one temporary central line day. If a patient has both a non-umbilical central line and an umbilical catheter on a given day, this is counted as one temporary central line day. Time of day for recording the number of patients with central lines/umbilical catheters should be within a four hours period of the same time each day.

In NICUs and high risk nurseries the number of non-umbilical central line/ umbilical catheter days will be stratified and reported separately by birth weight categories (<750 gm, 751-1000 gm, 1001-1500 gm, 1501-2500 gm, and >2500 gm).

Data collections forms are available for the collection of the number of central line days at the Centers for Disease Control and Prevention's National Healthcare Safety Network (NHSN) Members website which can be accessed

from a link on the MHDO website. These forms may be edited, and customized by both NHSN member and non-member hospitals for their use in collecting the number of central-line days or umbilical catheter days.

**Determination of Ventilator Days in ICUs, Mixed Acuity Units, and NICUs/High Risk Nurseries**

At the same time each day, the number of patients in each ICU, mixed acuity unit, and NICUs**/**high risk nursery with a "ventilator" or "mechanical ventilation" should be counted and at the end of the month these counts are summed. At the end of the quarter these monthly counts are summed and used to report the number of ventilator days in the past 12 months.

Time of day for recording the number of patients with ventilators should be within a four hours period of the same time each day.

Data collections forms are available for the collection of the number of ventilator days) at the Centers for Disease Control and Prevention's National Healthcare Safety Network (NHSN) Members website which can be accessed from a link on the MHDO website. These forms may be edited, and customized by both NHSN member and non-member hospitals for their use in collecting the number of ventilator days.

**HAI – 1 Central line catheter associated blood stream infection rate for intensive care unit patients, and;**

**HAI - 2 Central line catheter associated blood stream infection rate for high-risk nursery patients.**

Hospitals will submit data for each Central Line Associated Laboratory Confirmed Bloodstream Infection (CLALCBSI) defined as a laboratory-confirmed bloodstream infection (LCBSI) in patients in ICUs, mixed acuity units, or NICUs/high risk nurseries with a risk factor of having a temporary central line or umbilical catheter at the time of or within the 48 hours prior to developing the infection. This is regardless of whether the central line was inserted in the ICU, mixed acuity unit, or NICU or if they were inserted in another location in the reporting hospital. However, those patients whose central lines were inserted in other facilities prior to their transfer to the reporting facility are excluded from this measure.

**Numerator**

Using the MHDO HAI Data Collection Form found at the MHDO website at http://mhdo.maine.gov/imhdo/qualitydata.aspx, hospitals will report by numerator

the number of CLALCBSI by location (ICU, mixed acuity unit, and NICU). Every patient in the ICU, mixed acuity unit and NICU with a LCBSI and who has had a temporary central line (or umbilical catheter) in place anytime in the 48 hours prior to the infection regardless of whether they still have the central line (or umbilical catheter) inserted, will be counted. At the end of the quarter these counts are summed across all ICUs, mixed acuity units, and NICUs and used as the quarterly numerators for reporting CLALCBSIs.

In NICUs and high risk nurseries the number of CLALCBSI will be stratified and reported separately by birth weight categories (<750 gm, 751-1000 gm, 1001-1500 gm, 1501-2500 gm, and >2500 gm).

The hospital will develop a system for collection of the number of patients in their ICUs, mixed acuity units, and NICUs with LCBSIs from the patient charts. Data collections forms are available for the collection of numerator data at the Centers for Disease Control and Prevention's National Healthcare Safety Network (NHSN) Members website (can be accessed from a link on the MHDO website). These forms may be edited and customized by both NHSN member and non-member hospitals for their use in collecting the number of LCBSIs in their ICUs, mixed acuity units, and NICUs.

Exclusions:

- Patients whose central lines were inserted in other facilities prior to their transfer to the reporting facility are excluded from this measure.

**Denominator**

Using the MHDO HAI Data Collection Forms found at the MHDO website at http://mhdo.maine.gov/imhdo/qualitydata.aspx, hospitals will report by denominator the number of temporary central line (or temporary umbilical catheter) days in their ICUs, mixed acuity units, and NICUs in that quarter. This number may be summed for four quarters of the year to determine a hospital's number of central line days per year (see HAI-3 and HAI-4).

Exclusions:

- Patients whose central lines were inserted in other facilities prior to their transfer to the reporting facility are excluded from this measure

## HAI - 3 Percent compliance with all five evidence-based interventions for patients with intravascular central catheters (central line bundle compliance) in intensive care units

The five evidence-based interventions for the prevention of central line associated blood stream infections in ICUs and mixed acuity units are referred to as the ICU Central Line Bundle elements and include:

- Hand hygiene
- Maximal barrier precautions upon insertion
- Chlorhexidine skin antisepsis
- Optimal catheter site selection, with subclavian vein as the preferred site for non-tunneled catheters in patients 18 years and older (deviations should based on a clinical determination and not as a matter of convenience).
- Daily review of line necessity with prompt removal of unnecessary lines

The core aspect of the optimal site selection is the risk/benefit analysis by a physician as to whether the subclavian vein is most appropriate for the patient. There will be occasions when the practitioner determines that the risks of using the subclavian vein outweigh the benefits and a different vessel is selected. For the purposes of bundle compliance, if there is dialogue among the clinical team members as to the selection site and rationale, and there is documentation as to the reasons for selecting a different vessel, this aspect of the bundle should be considered as in compliance. It is not the intent of the bundle to force a physician to take an action that he or she feels is not clinically appropriate.

## HAI – 3 Hospitals with Less Than 360 Central Line Days per Year

### Numerator

Using the MHDO HAI Data Collection Forms found at the MHDO website at http://mhdo.maine.gov/imhdo/qualitydata.aspx, hospitals with less than 360 temporary central line days per year as measured in the previous year will report by numerator the number of patients in ICUs and mixed acuity units with a temporary central line inserted in that unit for whom all elements of the ICU Central Line Bundle are documented.

Evaluation of compliance with bundle elements will be done one day per week, thirteen weeks per quarter (52 weeks per year). Weekly data will be summed for quarterly reporting. The choice of the day of the week to conduct the compliance evaluation will be at the discretion of the hospital but evaluation on the same day of the week each week is strongly recommended.

After selecting the day of the week to conduct the compliance evaluation, the hospital will pull the chart for each patient present in the ICU or mixed acuity unit at any time during the previous seven days with a temporary central line that was inserted on that unit. Each chart and/or bundle worksheet will be reviewed to determine whether all four insertion related central line bundle elements were completed and documented for the insertion (e.g., a checklist for the insertion

process). The chart will also be review for compliance with the fifth bundle element (daily review for necessity) for the first full day of care following insertion (i.e., was the clinician's review of central line need documented in the chart for that day).

Using this method, hospitals with less than 360 central line days per year will evaluate every patient located in ICUs and mixed acuity units during the previous seven days with a central line for compliance with the first four bundle elements of insertion but the daily review of necessity bundle element will be a sample of that patient's central line days – specifically, only the first full day of care following insertion.

Compliance with the all five bundle elements will be evaluated for compliance only if the central line was inserted in the ICU or mixed acuity unit (not if inserted elsewhere in the hospital). Central lines inserted outside of the ICU or mixed acuity unit are excluded from bundle compliance evaluation.

If the central line was removed before the first full day of care following insertion, this is an indication that the daily review for necessity was done and the line was removed, therefore the fifth bundle element should be considered compliant.

If the patient was transferred to another facility or to another unit within the facility (not an ICU or mixed acuity unit) before the first full day of care, compliance would be evaluated for the first four bundle elements of insertion only. The fifth bundle element would be excluded from bundle compliance for purposes of compliance evaluation since the patient was not present for a full day to receive this element of care.

If a patient in the ICU or mixed acuity unit has a temporary central line for multiple weeks and is present on multiple compliance evaluations, they will be only be evaluated for compliance to the central line bundle during the first weekly compliance evaluation in which they are present. This is because the insertion occurred once and the daily assessment of line necessity (fifth bundle element) is only evaluated for the first full day of care following the insertion. They will not be counted in the numerator or denominators in future compliance evaluations unless they have a new line inserted in the ICU or mixed acuity unit. Then they would be treated as a new central line patient.

Bundle compliance is an "all or nothing" indicator. If any of the elements are not documented for that patient, do not count the patient in the numerator. If a bundle element is contraindicated for a particular patient and this is documented in their chart, then the bundle can still be considered compliant with regards to that element.

Hospital should design their own forms to document bundle elements in the patient's chart to allow them to assess whether the four elements of central line

insertion and the daily review of central line need were completed. Daily charting to account for the clinician's review of central line need is strongly recommended.

Examples of checklists for the insertion process and for daily charting of review of line necessity may be found on the IHI 5M Lives Campaign, Getting Started Kit: Prevent Central Line Infections How-to Guide as found at the MHDO website at http://mhdo.maine.gov/imhdo/qualitydata.aspx.

Exclusions:

- Patients whose lines were not inserted in the ICU or mixed acuity unit
- Patients less than 18 years of age at the date of ICU or mixed acuity unit admission

**Denominator**

Using the MHDO HAI Data Collection Forms found at the MHDO website at http://mhdo.maine.gov/imhdo/qualitydata.aspx, hospitals will report by denominator the total number of ICU and mixed acuity unit patients with a temporary central line that was inserted in those units each week in which the compliance evaluation is conducted for each of the thirteen weeks in the reporting quarter. Patients in the ICU or mixed acuity unit with central line catheters inserted for multiple weeks will only be counted during the first week in which their bundle compliance was evaluated unless they have a new line inserted in the ICU or mixed acuity unit. Then they would be treated as a new central line patient.

Exclusions:

- Patients whose lines were not inserted in the ICU or mixed acuity unit
- Patients less than 18 years of age at the date of ICU or mixed acuity unit admission

**HAI – 3 Hospitals with Greater Than or Equal to 360 Central Line Days per Year**

**Numerator**

Using the MHDO HAI Data Collection Forms found at the MHDO website at http://mhdo.maine.gov/imhdo/qualitydata.aspx, hospitals with greater than or equal to 360 temporary central line days per year as measured in the previous year will report by numerator the number of patients present in ICUs and mixed acuity units with a temporary central line inserted in that unit for whom all elements of the ICU Central Line Bundle are documented on the once per week point prevalence survey.

Evaluation of compliance with bundle elements will be done one day per week (on rotating days of the week), thirteen weeks per quarter. Weekly data will be summed for quarterly reporting. The choice of the day of the week to conduct the evaluation will be determined using the Sampling Methods for Bundle Compliance as found in Appendix B. This sampling methodology is based upon the Joint Commission (JC) Specifications Manual for National Hospital Quality Measures, Sampling Methods for the ICU Measure Set. However, it has been modified to include only Monday through Friday (Saturday and Sunday are excluded).

After selecting the day of the week to conduct the point prevalence survey, the hospital will pull the chart for each patient present in ICUs and mixed acuity units on that day with a temporary central line that was inserted in those units. Each chart and/or bundle worksheet will be reviewed to determine whether all four insertion related central line bundle elements were completed and documented for the insertion. The chart will also be review for compliance with the fifth bundle element (daily review for necessity) for the day of the prevalence survey (i.e., was the clinician's review of central line need documented in the chart for that day).

If the central line was inserted on the same day as the point prevalence survey, this is an indication that the daily review for necessity of the line was completed since the decision was made to insert the line, and therefore the fifth bundle element should be considered compliant.

If the central line was removed before the first full day of care following insertion (inserted and removed on the same day), this is an indication that the daily review for necessity was done and the line was removed, therefore the fifth bundle element should be considered compliant.

If the patient was transferred to another facility or to another unit within the facility (not an ICU or mixed acuity unit) before the first full day of care, compliance would be evaluated for the first four bundle elements of insertion only. The fifth bundle element would be excluded from bundle compliance for purposes of compliance evaluation since the patient was not present for a full day to receive this element of care.

Using this method, the hospitals with greater than or equal to 360 central line days per year will sample compliance one day per week for every patient with a central line in ICUs and mixed acuity units on that day of the week. Compliance will be evaluated for the four insertion elements regardless of the day the insertion occurred and for daily review for necessity on the day of the prevalence survey. Compliance with the all five bundle elements will be evaluated for compliance only if the central line was inserted in the ICU or mixed acuity unit (not if inserted elsewhere in the hospital).

If a patient in the ICU or mixed acuity unit has a temporary central line for multiple weeks and is present on multiple prevalence survey days, they will be evaluated for compliance to the central line bundle for each week in which a compliance evaluation is conducted in which they were present and had the central line. This means the same patient could be counted multiple times towards a hospital's ICU central line bundle compliance percentage.

Bundle compliance is an "all or nothing" indicator. If any of the elements are not documented for that patient, do not count the patient in the numerator. If a bundle element is contraindicated for a particular patient and this is documented in their chart, then the bundle can still be considered compliant with regards to that element.

Hospital should design their own forms to document elements in the patient's chart to allow them to assess whether the four elements of central line insertion and the daily review of central line need were completed. Daily charting to account for the clinician's review of central line need is strongly recommended. Monthly data will be summed for quarterly reporting.

Exclusions:

- Patients whose lines were not inserted in the ICU or mixed acuity unit
- Patients less than 18 years of age at the date of ICU or mixed acuity unit admission

**Denominator**

Using the MHDO HAI Data Collection Forms found at the MHDO website at http://mhdo.maine.gov/imhdo/qualitydata.aspx, hospitals will report by denominator the total number of ICU and mixed acuity unit patients with temporary central lines inserted in those units each day of the weekly prevalence survey for each of the thirteen weeks in the reporting quarter. The quarterly denominator is the sum of the population present for each point prevalence survey for each of the thirteen weeks of the quarter.

Exclusions:

- Patients whose lines were not inserted in the ICU or mixed acuity unit
- Patients less than 18 years of age at the date of ICU or mixed acuity unit admission

## HAI - 4 Percent compliance with the four insertion-related evidence-based interventions for patients with intravascular central catheters (central line bundle

**compliance) placed preoperatively, in pre-operative areas, operating rooms, and recovery areas**

The four insertion related evidence-based intervention for the prevention of central line associated blood stream infections inserted perioperatively are referred to as the Perioperative Central Line Bundle elements and include:

- Hand hygiene
- Maximal barrier precautions upon insertion
- Chlorhexidine skin antisepsis
- Optimal catheter site selection, with subclavian vein as the preferred site for non-tunneled catheters in patients 18 years and older (this should based on a clinical determination and not as a matter of convenience).

Note: Perioperative central line bundle elements do not include the daily review of line necessity with prompt removal of unnecessary lines although this is included in the ICU central line bundle elements.

For the purposes of this reporting effort, central lines inserted for diagnostic purposes (e.g., right heart catheterization, pulmonary angiography) in catheterization labs, interventional radiology units or other procedure areas that are normally removed directly after insertion are not included in HAI reporting. However, therapeutic lines inserted for infusion, withdrawal of blood, or hemodynamic monitoring by practitioners in perioperative settings (pre-operative areas, operating rooms, and recovery areas) are included in reporting (e.g. an interventional radiologist in an operating room inserting a central line in a great vessel).

## HAI – 4 Hospitals with Less Than 360 Central Line Days per Year

### Numerator

Using the MHDO HAI Data Collection Forms found at the MHDO website at http://mhdo.maine.gov/imhdo/qualitydata.aspx, hospitals with less than 360 temporary central line days per year as measured in the previous year will report by numerator the number of patients with temporary central lines inserted preoperatively, in pre-operative areas, operating rooms and recovery areas for whom all elements of the Perioperative Central Line Bundle are documented. This includes any patient having a temporary central line inserted in relation to any surgeries performed in any of the hospital's operating rooms including day surgeries and outpatient surgeries. This does not include central lines inserted in the patient's room prior to transport to the operating room.

Sampling will not be permitted for hospitals with less than 360 central line days per year; every patient receiving a temporary central line in relation to a surgery performed in the reporting hospital will have bundle compliance evaluated for the

four insertion related evidence-based elements. Collection of data for perioperative central line bundle compliance may be done weekly or monthly as the hospital chooses. Data will be summed for quarterly reporting.

Hospitals will pull the chart for each patient receiving a temporary central line in relation to a surgery performed in that hospital. Each chart and/or bundle worksheet will be reviewed to determine whether all four insertion related perioperative central line bundle elements were completed and documented for the insertion (e.g., a checklist for the insertion process).

Bundle compliance is an "all or nothing" indicator. If any of the four perioperative central line bundle elements are not documented for that patient, do not count the patient in the numerator. If a bundle element is contraindicated for a particular patient and this is documented in their chart, then the bundle can still be considered compliant with regards to that element.

Hospital should design their own forms to document elements in the patient's chart to allow them to assess whether the four elements of central line insertion were completed (e.g., a checklist for the insertion process). Examples of checklists for the insertion process may be found on the IHI 5M Lives Campaign, Getting Started Kit: Prevent Central Line Infections How-to Guide as found at the MHDO website at http://mhdo.maine.gov/imhdo/qualitydata.aspx.

Exclusions:

- Patients whose lines were inserted in their room prior to transport to the operating room
- Patients less than 18 years of age at the date of line insertion

**Denominator**

Using the MHDO HAI Data Collection Forms found at the MHDO website at http://mhdo.maine.gov/imhdo/qualitydata.aspx, hospitals will report by denominator the total number of patients with temporary central lines inserted preoperatively, in pre-operative areas, operating rooms and recovery areas for the reporting quarter. This includes any patient having a temporary central line inserted in relation to any surgeries performed in any of the hospital's operating rooms including day surgeries and outpatient surgeries.

Exclusions:

- Patients whose lines were inserted in their room prior to transport to the operating room
- Patients less than 18 years of age at the date of line insertion

## HAI – 4 Hospitals with Greater Than or Equal to 360 Central Line Days per Year

### Numerator

Using the MHDO HAI Data Collection Forms found at the MHDO website at http://mhdo.maine.gov/imhdo/qualitydata.aspx, hospitals with greater than or equal to 360 temporary central line days per year as measured in the previous year will report by numerator the number of patients with temporary central lines that are inserted preoperatively in pre-operative areas, operating rooms and recovery areas for whom all elements of the Perioperative Central Line Bundle are documented on the once per week point prevalence survey. This includes any patient having a temporary central line inserted in relation to any surgeries performed in any of the hospital's operating rooms including day surgeries and outpatient surgeries. This does not include central lines inserted in the patient's room prior to transport to the operating room.

Evaluation of compliance with bundle elements will be done one day per week (on rotating days of the week), thirteen weeks per quarter. Weekly data will be summed for quarterly reporting. The choice of the day of the week to conduct the compliance evaluation will be determined using the Sampling Methods for Bundle Compliance as found in Appendix B. This sampling methodology is based upon the Joint Commission (JC) Specifications Manual for National Hospital Quality Measures, Sampling Methods for the ICU Measure Set. However, it has been modified to include only Monday through Friday (Saturday and Sunday are excluded).

After selecting the day of the week to conduct the prevalence survey, the hospital will pull the chart for each patient receiving a temporary central line in relation to a surgery in the hospital on that day. Each chart and/or bundle worksheet will be reviewed to determine whether all four insertion related perioperative central line bundle elements were completed and documented for the insertion (e.g., a checklist for the insertion process).

Bundle compliance is an "all or nothing" indicator. If any of the four perioperative central line bundle elements are not documented for that patient, do not count the patient in the numerator. If a bundle element is contraindicated for a particular patient and this is documented in their chart, then the bundle can still be considered compliant with regards to that element.

Hospital should design their own forms to document elements in the patient's chart to allow them to assess whether the four elements of perioperative central line insertion were completed. Examples of checklists for the insertion process may be found on the IHI 5M Lives Campaign, Getting Started Kit: Prevent Central Line Infections How-to Guide as found at the MHDO website at http://mhdo.maine.gov/imhdo/qualitydata.aspx.

Exclusions:

- Patients whose lines were inserted in their room prior to transport to the operating room
- Patients less than 18 years of age at the date of line insertion

**Denominator**

Using the MHDO HAI Data Collection Forms found at the MHDO website at http://mhdo.maine.gov/imhdo/qualitydata.aspx, hospitals will report by denominator the total number of patients with temporary central lines inserted preoperatively, in pre-operative areas, operating rooms and recovery areas on the day of the weekly prevalence survey for each of the thirteen weeks in the reporting quarter. This includes any patient having a temporary central line inserted in relation to any surgeries performed in any of the hospital's operating rooms including day surgeries and outpatient surgeries on the day of the weekly compliance evaluation. Each patient having a central line inserted related to surgery on the day of the weekly compliance evaluation will be evaluated for compliance to the bundle. The quarterly denominator is the sum of the patients having perioperative central lines inserted on the day of each point prevalence survey for each of the thirteen weeks of the quarter.

Exclusions:

- Patients whose lines were inserted in their room prior to transport to the operating room
- Patients less than 18 years of age at the date of line insertion

## HAI - 5 Percent compliance with all four evidence-based interventions for patients with mechanical ventilation (ventilator bundle compliance) in intensive care units.

The four evidence-based interventions for the prevention of ventilator associated pneumonia are referred to the ICU Ventilator Bundle elements and include:

- Head of the bed elevation 30 degrees or greater
- Daily "sedative interruption" and daily assessment of readiness to extubate
- PUD (peptic ulcer disease) prophylaxis
- DVT (deep venous thrombosis) prophylaxis

**HAI – 5 Hospitals with Less Than 180 Ventilator Days per Year**

**Numerator**

Using the MHDO HAI Data Collection Forms found at the MHDO website at http://mhdo.maine.gov/imhdo/qualitydata.aspx, hospitals with less than 180 ventilator days per year as measured in the previous year will report by numerator the number of patients in the ICUs and mixed acuity units with a "ventilator" or "mechanical ventilation" for which all elements of the ICU Ventilator Bundle are documented.

Evaluation for compliance with bundle elements will be done one day per week thirteen weeks per quarter (52 weeks per year). Weekly data will be summed for quarterly reporting. The choice of the day of the week to conduct the compliance evaluation will be at the discretion of the hospital but evaluation on the same day of the week each week is strongly recommended.

After selecting the day of the week to conduct the compliance evaluation, the hospital will pull the chart for each patient present in the ICU or mixed acuity unit on a ventilator at any time during the previous 7 days during that week. Each chart and/or bundle worksheet will be reviewed to determine whether all four ventilator bundle elements were completed and documented for the first full day of care following intubation. Each patient in the ICU or mixed acuity unit having a ventilator at any time during the previous 7 days will be evaluated for compliance to the ICU ventilator bundle for their first full day of care after intubation.

Using this method, the hospitals with less than 180 ventilator days per year will have every patient with a ventilator evaluated for compliance with all four of the ventilator bundle elements but only for a sample of the patient's ventilator days – specifically, only for the first full day of care following intubation.

If the patient was intubated and extubated within a twelve hours period, the patient is excluded from bundle compliance evaluation.

If the patient was on mechanical ventilation for more than twelve hours but was extubated before the first full day of care, this is an indication that the daily "sedative interruption" and assessment of readiness to extubate was done and mechanical ventilation was removed, therefore the second bundle element should be considered compliant.

If the patient was transferred to another facility before the first full day of care, the daily "sedative interruption" and assessment of readiness to extubate is excluded from bundle compliance for purposes of compliance evaluation since the patient was not present for a full day to receive this element of care.

For the purposes of bundle compliance evaluation, if PUD and DVT prophylaxis were documented as ordered in the patient's chart, these bundle elements are considered compliant.

If a patient in the ICU or mixed acuity unit is on mechanical ventilation for multiple weeks and is present on multiple compliance evaluations, they will only be evaluated for compliance to the ventilator bundle during the first weekly compliance evaluation in which they are present. This is because the bundle is only evaluated for the first full day of care following intubation. They will not be counted in the numerator or denominator in future compliance evaluations unless they are extubated and re-intubated. Then they would be treated as a new ventilator patient.

Bundle compliance is an "all or nothing" indicator. If any of the elements are not documented for that patient, do not count the patient in the numerator. If a bundle element is contraindicated for a particular patient and this is documented in their chart, then the bundle can still be considered compliant with regards to that element.

Hospital should design their own forms to document elements in the patient's chart to allow them to assess whether the four elements of the ICU ventilator bundle were completed. Daily charting is strongly recommended. Examples of checklists for the insertion process may be found on the IHI 5M Lives Campaign, Getting Started Kit: Prevent Ventilator Associated Pneumonia How-to Guide as found at the MHDO website at http://mhdo.maine.gov/imhdo/qualitydata.aspx.

Exclusions:

- Patients less than 18 years of age at the date of ICU or mixed acuity unit admission
- Patients on mechanical ventilation for less than twelve hours

**Denominator**

Using the MHDO HAI Data Collection Forms found at the MHDO website at http://mhdo.maine.gov/imhdo/qualitydata.aspx, hospitals will report by denominator the total number of patients with a ventilator in the ICUs and mixed acuity units each week in which the compliance evaluation is conducted for each of the thirteen weeks in the reporting quarter. Patients in the ICU or mixed acuity unit on mechanical ventilation for multiple weeks will only be counted during the first week in which their bundle compliance was evaluated unless they are extubated and re-intubated. Then they would be treated as a new ventilator patient.

Exclusions:

- Patients on mechanical ventilation for less than twelve hours
- Patients less than 18 years of age at the date of ICU or mixed acuity unit admission

## HAI – 5 Hospitals Greater Than or Equal to 180 Ventilator Days per Year

### Numerator

Using the MHDO HAI Data Collection Forms found at the MHDO website at http://mhdo.maine.gov/imhdo/qualitydata.aspx, hospitals with greater than or equal to 180 ventilator days per year as measured in the previous year will report by numerator the number of patients in the ICUs and mixed acuity units with a ventilator or mechanical ventilation for whom all elements of the ICU Ventilator Bundle are documented on the once per week point prevalence survey.

Evaluating for compliance with bundle elements will be done one day per week (on rotating days of the week), thirteen weeks per quarter. Weekly data will be summed for quarterly reporting. The choice of the day of the week to conduct the compliance evaluation will be determined using the Sampling Methods for Bundle Compliance as found in Appendix B. This sampling methodology is based upon the Joint Commission (JC) Specifications Manual for National Hospital Quality Measures, Sampling Methods for the ICU Measure Set. However, it has been modified to include only Monday through Friday (Saturday and Sunday are excluded).

After selecting the day of the week to conduct the point prevalence survey, the hospital will pull the chart for each patient present in the ICU or mixed acuity unit with a ventilator on that day. Each chart and/or bundle worksheet will be reviewed to determine whether all four ICU ventilator bundle elements were completed and documented for the day of the prevalence survey.

If the patient was intubated on the same day as the point prevalence survey, the daily “sedative interruption” and assessment of readiness to extubate is excluded from bundle compliance for purposes of compliance evaluation since the patient was not present for a full day to receive this element of care.

If the patient was intubated and extubated on the same day, the daily “sedative interruption” and assessment of readiness to extubate is excluded from bundle compliance for purposes of compliance evaluation since the patient was not intubated for a full day to receive this element of care.

If the patient was transferred to another facility before the first full day of care, the daily “sedative interruption” and assessment of readiness to extubate is excluded from bundle compliance for purposes of compliance evaluation since the patient was not present for a full day to receive this element of care.

For the purposes of bundle compliance evaluation, if PUD and DVT prophylaxis were documented as ordered in the patient’s chart, these bundle elements are considered compliant.

Using this method, the hospitals with greater than or equal to 180 ventilator days per year will sample all four elements of bundle compliance one day per week for every patient with a ventilator in the ICUs and mixed acuity units on that day of the week.

If a patient in the ICU or mixed acuity unit and on mechanical ventilation for multiple weeks and is present on multiple prevalence survey days, they will be evaluated for compliance to the ventilator bundle for each week in which a compliance evaluation is conducted in which they were on the ventilator. This means the same patient could be counted multiple times towards a hospital's ICU ventilator bundle compliance percentage.

Bundle compliance is an "all or nothing" indicator. If any of the elements are not documented for that patient, do not count the patient in the numerator. If a bundle element is contraindicated for a particular patient and this is documented in their chart, then the bundle can still be considered compliant with regards to that element.

Hospital should design their own forms to document elements in the patient's chart to allow them to assess whether the four elements of the ICU ventilator bundle were completed. Daily charting is strongly recommended. Examples of checklists for the insertion process may be found on the IHI 5M Lives Campaign, Getting Started Kit: Prevent Ventilator Associated Pneumonia How-to Guide as found at the MHDO website at http://mhdo.maine.gov/imhdo/qualitydata.aspx.

Exclusions:

- Patients less than 18 years of age at the date of ICU or mixed acuity unit admission

**Denominator**

Using the MHDO HAI Data Collection Forms found at the MHDO website at http://mhdo.maine.gov/imhdo/qualitydata.aspx, hospitals will report by denominator the total number of ICU or mixed acuity patients with a ventilator each day of the weekly prevalence survey for each of the thirteen weeks in the reporting quarter. The quarterly denominator is the sum of the population present for each point prevalence survey for each of the thirteen weeks of the quarter.

Exclusions:

- Patients less than 18 years of age at the date of ICU or mixed acuity admission

# Appendix A

# Excel File Naming Convention for Data Submission

# Appendix A

## Excel File Naming Convention for HAI Data Submission

The **Naming Convention** for the Healthcare Associated Infection data files is as follows. Please name your Excel file before submission using the format as noted below:

**HAI-XXXXXX-2008QTR1** for data generated in January, February, and March of 2008 and due to the Maine Health Data Organization (MHDO) no later than September 1st, 2008.

**HAI-XXXXXX-2008QTR2** for data from April, May, and June of 2008 and due to the MHDO no later than December 1st, 2008.

**HAI-XXXXXX-2008QTR3** for data from July, August, and September of 2008 and due to the MHDO no later than March 1st, 2009.

**HAI-XXXXXX-2008QTR4** for data from October, November, and December of 2008 and due to the MHDO no later than June 1st, 2009.

The data file naming will continue in the same fashion for future quarters and years of data.

**Where XXXXXX in the file name is the hospital's MHDO ID Number as listed below.**

| MHDO ID Number | HOSPITAL NAME |
|---|---|
| 200018 | AROOSTOOK MEDICAL CENTER |
| 200051 | BLUE HILL MEMORIAL |
| 200007 | BRIDGTON HOSPITAL |
| 200023 | C.A. DEAN MEMORIAL |
| 200055 | CALAIS REGIONAL |
| 200031 | CARY MEDICAL CENTER |
| 200024 | CENTRAL MAINE MEDICAL CENTER |
| 200027 | DOWN EAST COMMUNITY |
| 200033 | EASTERN MAINE MEDICAL CENTER |
| 200037 | FRANKLIN MEMORIAL |
| 200040 | H.D. GOODALL |
| 200026 | HOULTON REGIONAL |
| 200041 | INLAND HOSPITAL |
| 200050 | MAINE COAST MEMORIAL |
| 200015 | MAINE GENERAL – AUGUSTA & WATERVILLE |
| 200009 | MAINE MEDICAL CENTER |
| 200066 | MAYO REGIONAL |

| | |
|---|---|
| 200008 | MERCY HOSPITAL |
| 200044 | MID-COAST HOSPITAL |
| 200002 | MILES MEMORIAL |
| 200003 | MILLINOCKET REGIONAL |
| 200038 | MT DESERT ISLAND |
| 200052 | NORTHERN MAINE MEDICAL CENTER |
| 200025 | PARKVIEW ADVENTIST MEDICAL CTR |
| 200063 | PENOBSCOT BAY MEDICAL CENTER |
| 200062 | PENOBSCOT VALLEY HOSPITAL |
| 200012 | REDINGTON-FAIRVIEW GENERAL |
| 200016 | RUMFORD HOSPITAL |
| 200028 | SEBASTICOOK VALLEY HOSPITAL |
| 200019 | SOUTHERN MAINE MEDICAL CENTER |
| 200006 | ST ANDREWS |
| 200001 | ST JOSEPH |
| 200034 | ST MARYS REGIONAL MEDICAL CENTER |
| 200032 | STEPHENS MEMORIAL |
| 200013 | WALDO COUNTY GENERAL |
| 200020 | YORK HOSPITAL |

# Appendix B

# Sampling Methods for Bundle Compliance

# Appendix B

## Sampling Methods for Bundle Compliance

### From the Joint Commission Specifications Manual for National Hospital Quality Measures, Sampling Methods for the ICU Measure Set

The day of the week is the sampling unit used for the bundle compliance measures. To be able to analyze day of the week variability in the measure rates within a month, it is desirable to sample a different day of the week for each week of the month. The most efficient way to do this is to randomly sample a sequence of days of the week for each month, one day sampled for each week of the month, here called a random permutation. Once a permutation is sampled, the sampling plan is set for the month. A table of random permutations which can be used for this purpose is given in Table 1.

The sampling procedure is to randomly choose a number from 1 to 35. Locate this number under the permutation column in Table 1. Starting with week 1 and continuing through week 4, find the day of the week to collect data for each week in the four week period under the sampled permutation. For example, say that the number 25 was randomly chosen. Then looking at permutation 25 in Table 1, we would collect the bundle data on Wednesday in week 1, Friday in week 2, Monday in week 3, and Tuesday in week 4. Once the four sampled collection days have been used, then redraw for the next four week sample. Do this every four weeks throughout the year.

**Table 1: Random Permutations for Sampling Days of the Week for the Bundle Compliance Measures**

| Permutation | Week 1 | Week 2 | Week 3 | Week 4 |
|---|---|---|---|---|
| 1 | Friday | Monday | Tuesday | Wednesday |
| 2 | Thursday | Tuesday | Monday | Friday |
| 3 | Thursday | Friday | Tuesday | Wednesday |
| 4 | Tuesday | Monday | Wednesday | Friday |
| 5 | Tuesday | Wednesday | Friday | Thursday |
| 6 | Monday | Tuesday | Thursday | Friday |
| 7 | Monday | Wednesday | Tuesday | Thursday |
| 8 | Wednesday | Tuesday | Friday | Thursday |
| 9 | Friday | Thursday | Wednesday | Monday |
| 10 | Friday | Wednesday | Monday | Tuesday |
| 11 | Thursday | Wednesday | Friday | Monday |
| 12 | Wednesday | Friday | Thursday | Tuesday |
| 13 | Monday | Tuesday | Thursday | Wednesday |
| 14 | Monday | Friday | Thursday | Wednesday |

| | | | | |
|---|---|---|---|---|
| 15 | Friday | Monday | Tuesday | Thursday |
| 16 | Friday | Tuesday | Wednesday | Monday |
| 17 | Tuesday | Monday | Friday | Thursday |
| 18 | Monday | Friday | Thursday | Tuesday |
| 19 | Wednesday | Thursday | Monday | Tuesday |
| 20 | Tuesday | Wednesday | Monday | Friday |
| 21 | Wednesday | Monday | Friday | Thursday |
| 22 | Wednesday | Tuesday | Thursday | Monday |
| 23 | Wednesday | Thursday | Tuesday | Friday |
| 24 | Monday | Friday | Tuesday | Thursday |
| 25 | Wednesday | Friday | Monday | Tuesday |
| 26 | Tuesday | Thursday | Friday | Monday |
| 27 | Wednesday | Tuesday | Friday | Thursday |
| 28 | Tuesday | Friday | Monday | Wednesday |
| 29 | Wednesday | Tuesday | Friday | Monday |
| 30 | Tuesday | Thursday | Monday | Wednesday |
| 31 | Thursday | Friday | Monday | Tuesday |
| 32 | Friday | Monday | Wednesday | Thursday |
| 33 | Thursday | Wednesday | Tuesday | Monday |
| 34 | Tuesday | Monday | Wednesday | Thursday |
| 35 | Monday | Friday | Wednesday | Tuesday |